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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,093	02/16/2001	In-Duk Song	8733.398.00	3221

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EXAMINER
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CHOWDHURY, TARIFUR RASHID

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 04/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/784,093	SONG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Tarifur R Chowdhury	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 7-9, 16 and 17 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6 and 10-15 is/are allowed.
- 6) ☒ Claim(s) 18-25 and 27-34 is/are rejected.
- 7) ☒ Claim(s) 26 and 35 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. **Claims 18-20, 23-25, 27-30, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (AAPA) in view of Shin et al., (Shin), USPAT 6,259,504 and De Keyzer et al., (De), USPAT 5,157,527**

5. The AAPA described in the present application discloses in pages 1-6 and shown in Figs. 3 and 4, discloses, a liquid crystal display device comprising:

- a liquid crystal panel (111) having a plurality of gate lines (117) and data lines (119) and a plurality of sub-pixels, wherein the gate lines (117) are arranged in a transverse direction and the data lines (119) are arranged in a longitudinal direction,

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wherein each sub-pixel is defined by the gate and data lines and corresponds to a color filter that has one of red, green, blue and white colors;

- a gate driver integrated circuit ( 113b) connected to the plural gate lines (117) for driving the gate lines, the gate driver IC arranged on a first side portion of the liquid crystal panel (111); and

- a data driver integrated circuit (115a) connected to the plural data lines (119) for driving the data lines, the data driver IC arranged on a second side of the liquid crystal panel (111).

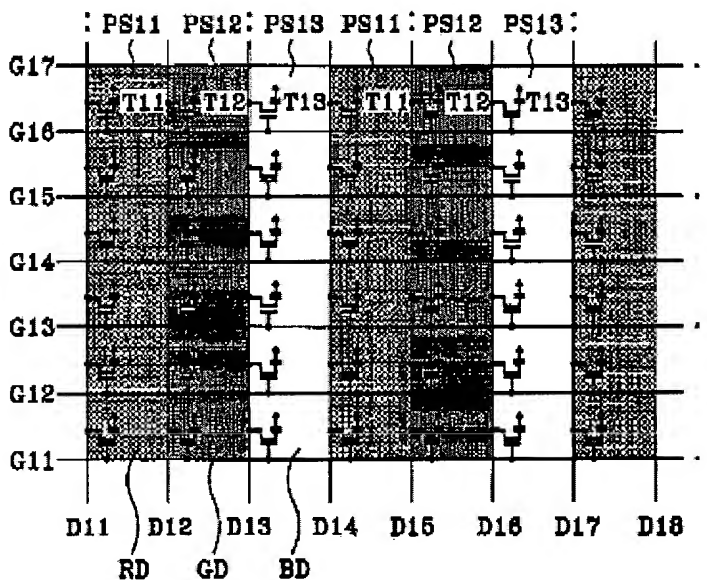
The AAPA described in the instant application also discloses that in general, the LCD device includes a liquid crystal panel having an upper and lower substrates and an interposed liquid crystal material. The upper substrate referred to as a color filter substrate and the lower substrate is called an array substrate and includes gate lines arranged in a transverse direction and data lines arranged in a longitudinal direction perpendicular to the gate lines (page 2, lines 9-13).

The AAPA described in the present application differs from the claimed invention because it does not explicitly disclose that the color filters are stripe-shaped such that color filters along the same data line have the same color and adjacent ones of color filters along the same gate line have different colors.

Shin discloses that typically color filters are arranged in one of several patterns such as mosaic-pattern, stripe-pattern and triangle-pattern (col. 1, lines 13-15). Shin also discloses (col. 1, lines 15-43) and shows in Fig. 1 a the stripe type pixel arrangement that includes a plurality of gate lines (G11, G12, G13.....) and a plurality of

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data lines (D11, D12, D13.....) and that the color filters along the same data line have the same color and adjacent ones of color filters along the same gate line have different colors. Shin further discloses that stripe-type pixel arrangement is advantageous since it provides an arrangement wherein the resistance of the data lines becomes small (col. 3, lines 6-11).



Shin is evidence that ordinary workers in the art would find a reason, suggestion or motivation to use stripe type pixel arrangement in a liquid crystal display.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the display device of the AAPA by having stripe-shaped pixel arrangement such as color filters along the same data line have the same color and adjacent ones of color filters along the same gate line have different colors to avail a common and known pixel arrangement to optimize performance by reducing the resistance of the data lines.

Still lacking is the limitation that a black matrix is arranged between each color filter.

De discloses a liquid crystal display having color filters. De also discloses that that the color filter may comprise a black matrix between the cells to enhance display contrast.

De is evidence that ordinary workers in the art would find a reason, suggestion or motivation to arrange a black matrix between each color filter.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the display device of the AAPA when modified by Shin by arranging a black matrix between each color filter in order to enhance display contrast, as per the teachings of De.

The AAPA described in the present application also discloses that the color filter has a white color and as to the white color being made of a transparent resin is common and known in the art and thus would have been obvious to avail a proven material.

Accordingly, claims 18-20, 24, 25, 27, 33 and 34 would have been obvious.

As to claims 23 and 29, using the data driver IC to drive adjacent odd and even numbered data lines is considered as intended use and thus would have been obvious.

As to claim 28, the AAPA described in the present application discloses that the liquid crystal display device comprises at least one tape carrier package connecting the at least one data driver IC to the liquid crystal cell.

As to claim 30, the AAPA described in the present application shows in Fig. 3 that only one sub-pixel corresponding to a color filter that has red, green, blue and white

colors and each data line is connected to a sub-pixel corresponding to one of the color filters. Further, it is known that a single liquid crystal display panel comprises a plurality of sub-pixels. Therefore, it would have been obvious to one of ordinary skill in the art that each data line is connected to a plurality of sub-pixels each corresponding to one of the color filters having a same color.

**6. Claims 21, 22, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Shin and De as applied to claims 18-20, 23-25, 27-30, 33 and 34 above and further in view of Shiba et al., (Shiba), USPAT 5,526,014.**

7. The AAPA described in the present application differs from the claimed invention because it does not explicitly disclose the limitation such as using the gate driver IC to alternate polarity of a gate line driving signal either for each of the gate lines at each frame interval or for adjacent gate lines during a same frame interval.

Shiba discloses that if driving voltages of the same polarity are applied continuously to a liquid cell, electrochemical changes are generated in the pixel electrode and the counter electrode, deteriorating the sensitivity of display and luminance. In order to prevent this it is necessary to constantly invert the polarity of the voltage applied to the liquid crystal cell (col. 2, lines 29-40).

Shiba is evidence that ordinary workers in the art of liquid crystal would find a reason, suggestion or motivation to use gate driver IC to alternate polarity of a gate line driving signal either for each of the gate lines at each frame interval or for adjacent gate lines during a same frame interval.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the gate driver IC of the AAPA to alternate polarity of a gate line driving signal either for each of the gate lines at each frame interval or for adjacent gate lines during a same frame interval so that the deterioration of sensitivity of the display and luminance is prevented.

***Allowable Subject Matter***

1. Claims 1-6 and 10-15 are allowed.
2. Claims 26 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

3. Applicant's arguments filed on 02/05/04 have been fully considered but they are not persuasive.

In response to applicant's argument that Shin does not teach or even suggest "color filters along the same data line have the same color", it is respectfully pointed out to applicant that Shin discloses a conventional pixel type arrangement such as stripe-type (shown in Fig. 1) which clearly shows that the color filters along the same data line have same color.

In response to applicant's argument that Shin fails to provide a motivation for using pixel arrangement of stripe-type, it is respectfully pointed out to applicant that Shin discloses that stripe-type arrangement are advantageous since it provides a display wherein the resistance of the data lines are small and thus performance is optimized.



Further, in response to applicant's request to provide a reference supporting examiner's position about arranging a black matrix between color filters, applicant's attention is respectfully requested to USPAT 5,157,527, which clearly discloses that the use of black matrix improves display contrast.

***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R Chowdhury whose telephone number is (571) 272-2287. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TRC  
April 21, 2004



TARIFUR R. CHOWDHURY  
PRIMARY EXAMINER